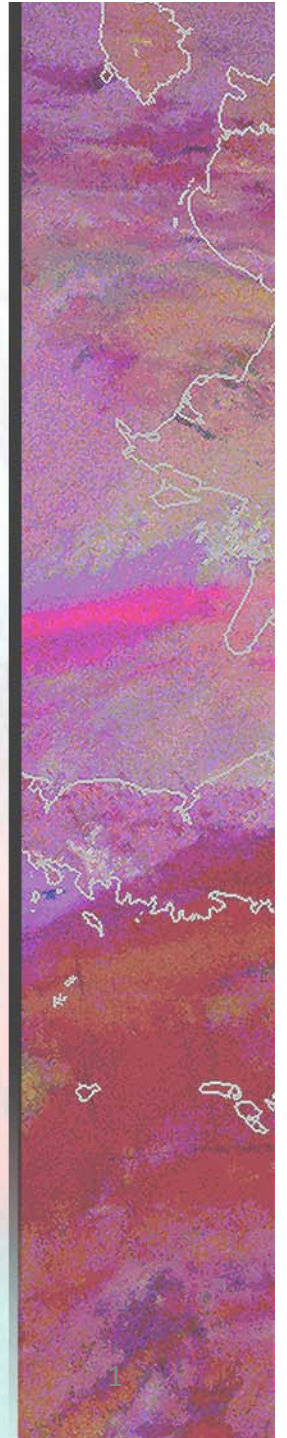


SPoRT Overview and Potential TEMPO Roles

Bradley Zavodsky and Emily Berndt

Presentation to TEMPO Science Team Meeting

May 31, 2017



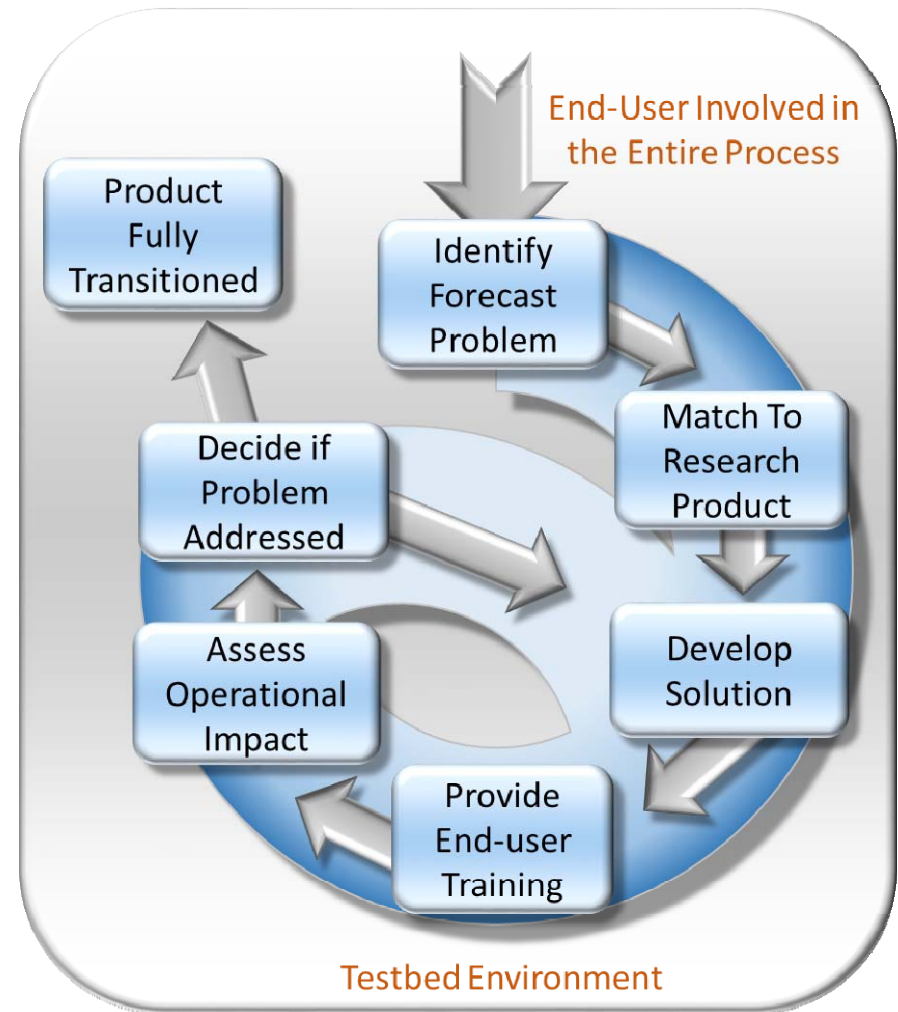
Short-term Prediction Research and Transition (SPoRT) Center

- **Mission:** Transition unique satellite observations and research capabilities to the operational weather community to improve short-term weather forecasts on a regional and local scale.
- Demonstrate capability of NASA and NOAA experimental products to weather applications and societal benefit
- Proven paradigm for transition of research and experimental data to operations
- Strategy to engage with new NASA missions with current users and expand to collaborate with users from other government agencies and private sector

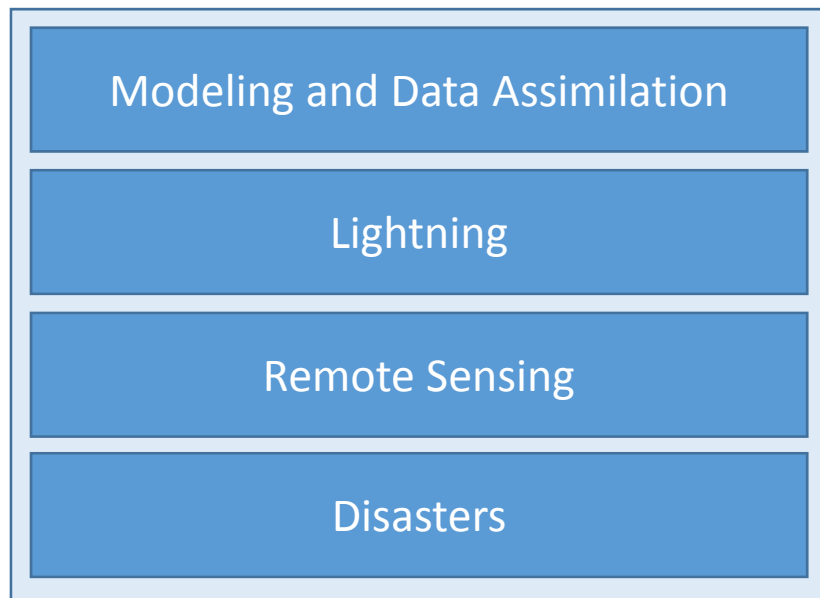


SPoRT R2O/O2R Paradigm

- Concept has been used to successfully transition a variety of satellite datasets to operational users for 15 years
- Bridge the “Valley of Death”
- Can’t “throw data over the fence”
 - maintain interactive partnerships with help of specific advocates
 - integrate into user decision support tools
 - create product training
 - perform targeted product assessments
- Use experimental datasets and proxies in advance of operational use to demonstrate utility and impact
- Other groups in the community have adopted this paradigm



SPoRT Areas of Expertise



Decision Support Systems

Transitions, Training, and Assessment

- Perform targeted research activities to exploit unique capabilities of NASA satellites and technologies to solve specific weather forecasting challenges
- Support for product dissemination to end-user decision support tools (e.g., WMS/GIS, NAWIPS, etc.)
- Apply unique R2O/O2R paradigm for transitioning data and obtaining valuable feedback from end users/forecasters



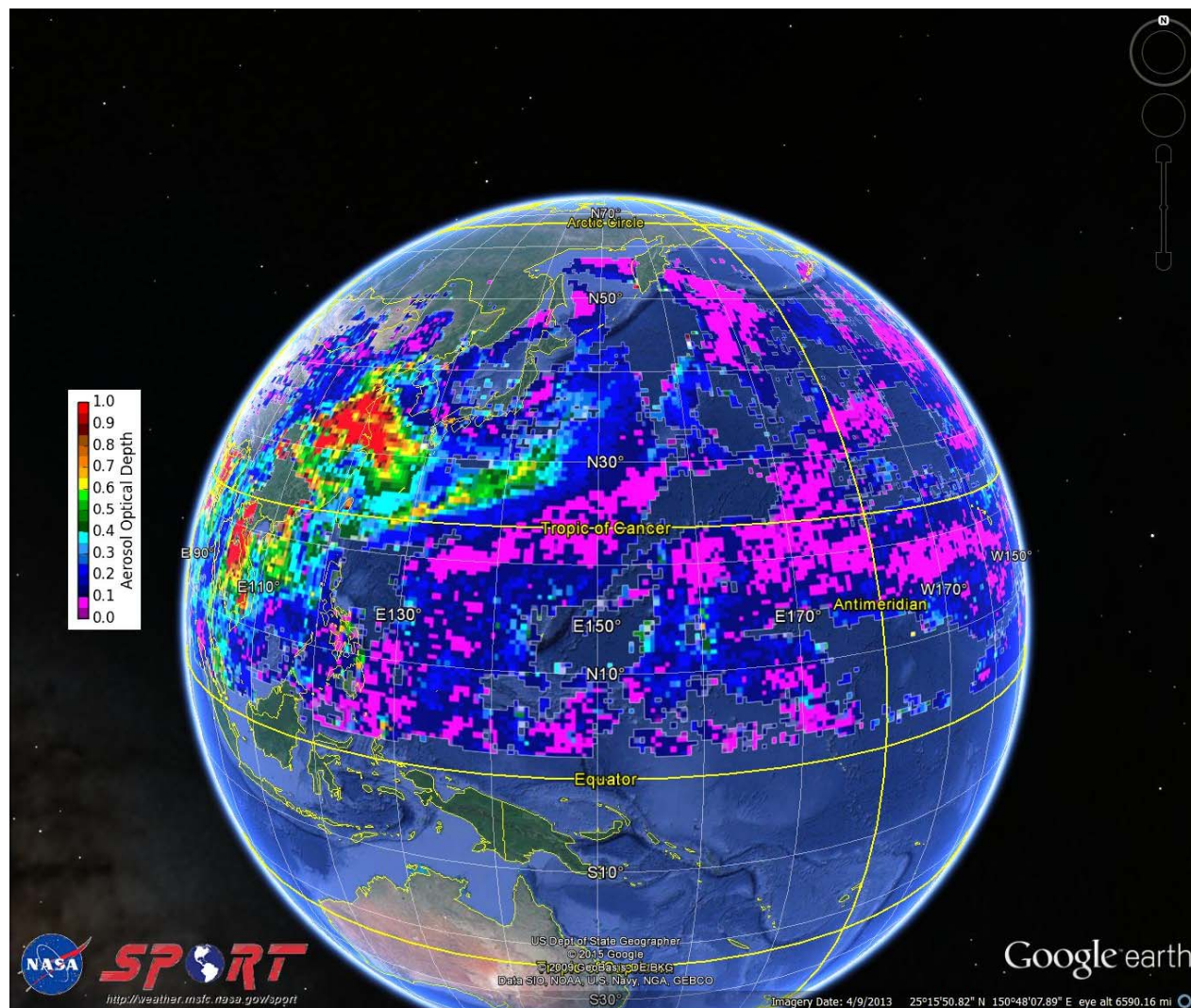
Desired SPoRT Roles

- **Combine SPoRT paradigm with NASA's Early Adopter concept in defined role to lead coordination of mission applications**
 - Coordinate/facilitate feedback between product developers, science team, and end-users to ensure value-added product
 - Concept has been implemented for applications for TROPICS EVM (Zavodsky DPA Lead) and S-NPP (Jedlovec DPA Co-Lead)
 - Collaborated with Mike Newchurch and UAH to host highly-attended and very successful 1st TEMPO Applications Workshop last summer in Huntsville as demonstration of opening dialogue
- **Participate in application process**
 - Transition experimental, community-developed products to end-users
 - Develop targeted, end-user focused training and assist with assessment of data impacts by operational decision makers
- **Early Adopter project**
 - SPoRT has had successful projects for SMAP and ICESat-2 EA programs
 - SPoRT receives directed funding from NASA's R&A Program to support R2O for select products for select users



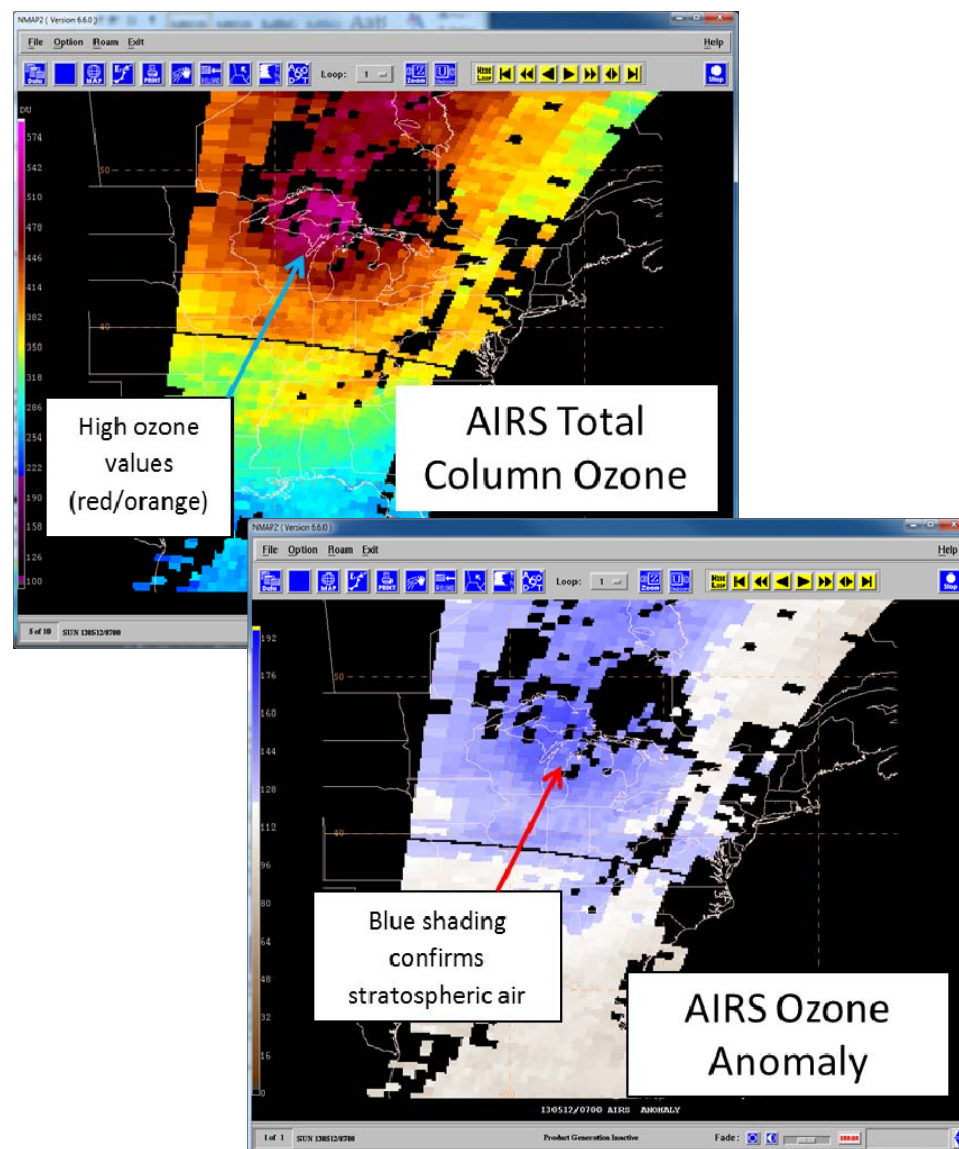
Aiding Dissemination and Visualization

- SPoRT maintains a robust real-time data dissemination process to easily transfer products to customers
- SPoRT near-global Aerosol Optical Depth (AOD) product displayed in KML format for use with Google Earth (easily converted to other formats)
- Experimental TEMPO data products could be developed in collaboration with SPoRT and served to users



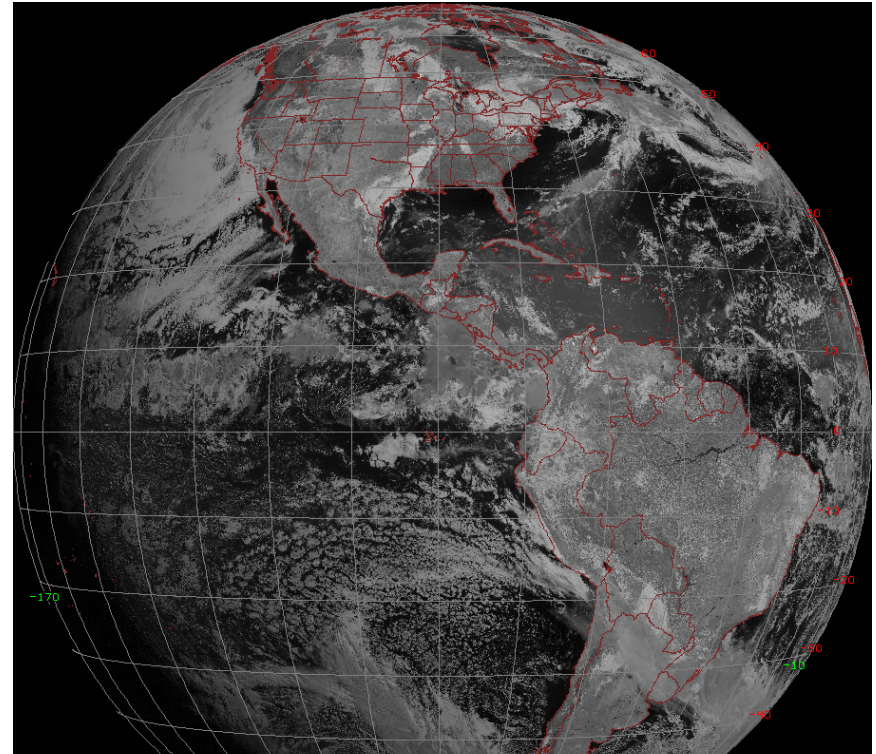
Collaborations with NOAA National Centers

- SPoRT has long-standing partnerships with many of the NOAA National Centers and has transitioned a number of products
- Total column ozone products derived from Hyperspectral IR Sounder retrievals provided to operational forecasters in N-AWIPS/AWIPS format
- Identify stratospheric intrusions that can lead to rapid cyclogenesis and stratospheric driven high wind events (WPC, OPC)
- Aviation forecasting challenges of identifying turbulence near the jet stream and health/safety issues associated with elevated ozone near flight level (AWC)



Community Proxy Products

- There is an opportunity to use real-time GOES-16 data combined with OMPS/OMI radiances as a proxy for TEMPO for demonstration of O_3 & NO_2 baseline products and development of prototype products (AOD, SO_2 , etc.) important for air quality monitoring and forecasting.
- Create partnerships (Jun Wang, U. Iowa; GOES-R AQ Proving Ground) to develop/ disseminate proxy products and training



Wang, J. and co-authors, A numerical testbed for remote sensing of aerosols, and its demonstration for evaluating retrieval synergy from a geostationary satellite constellation of GEO-CAPE and GOES-R, *J. Quant. Spectrosc. Radiat. Transfer.*, 146, 510-528, 2014.

http://arroma.unl.edu/docs/publication/paper_pdf/2014/Wang_JQS_RT_2014.pdf



GOES-R/TEMPO Synergy and Air Quality Proving Ground Activities, Shobha Kondragunta, NOAA/NESDIS
ftp://geo.nsstc.nasa.gov/SPoRT/people/zavodsky/TEMPO_Workshop/Session6.2_Kondragunta_GOESRTEMPO.pptx

Summary

- **SPoRT is a highly-successful, long-standing R2O/O2R center that specializes in transition of satellite datasets to the operational decision-making community**
- **SPoRT maintains a proven paradigm for transition of research and experimental data to operations to demonstrate capabilities of satellite datasets on end-user decisions**
- **SPoRT has expertise in the areas of remote sensing and modeling that would be relevant Early Adopter capabilities for specific projects with specific end users**
- **SPoRT wants to work with the mission team and NASA HQ to carve out a specific role that our project personnel could play to lead an applications team to accelerate the operational use of TEMPO data to the growing user community**



Questions/Comments/Discussion

For More Information or Examples of Our
Interaction with End-Users:

Website: <http://weather.msfc.nasa.gov/sport/>

Blog: <https://nasasport.wordpress.com/>

Twitter: @NASA_SPoRT

Facebook: NASA SPoRT Center

